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IMPACT OF THE GUIDE SYLLABUS FOR TRAINING AT STPA CENTRES, OTHER TRAINING CENTRES AND STATISTICAL OFFICES

GUIDE SYLLABUS FOR MIDDLE LEVEL STATISTICAL TRAINING

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I. INTRODUCTION

1. The original purpose of this paper was to discuss the impact of the ECA guide syllabus for middle level personnel in statistics in the formulation or improvement of teaching programmes at STPA centres. The guide syllabus (document ST/ECA/STPA/DM.2/3/Rev.1) was prepared by ECA during 1982. However it was considered too early to measure this impact since for practical purposes there has been only three academic years since the syllabus was produced. Such an interval of time is not sufficient for existing syllabuses of the training centres to reflect the recommendations of the guide syllabus. It was therefore decided that it is useful at this stage to compare the guide syllabus prepared by ECA and the syllabuses prepared and being utilised by STPA centres for their middle level training programmes. This is one way of measuring the extent to which the syllabuses agree or differ in their contents. At a later stage ECA will discuss with the individual STPA centres, with the purpose of measuring the extent to which the ECA guide syllabus has been or is intended to be utilised in the formulation or improvement of teaching programmes.

2. The comparison of the syllabuses will be done for the subjects, topics with subjects and the number of hours devoted to each subject. It may be recalled that the Statistical Training Programme for Africa (STPA) has admitted fifteen centres to become part of the programme. There are seven centres in the French-speaking African countries and the eighth French-speaking centre is in France. There are also in addition seven centres in the English-speaking African countries. The centres offer middle level statistical training, professional level statistical training or a combination of the two. These centres can be classified into three categories as follows:

(a) Those offering middle level statistical training programmes only;

(b) Those offering professional level statistical training programmes only;

(c) Those offering both middle level and professional level statistical training programmes.

This paper deals only with centres falling into categories (a) and (c) since they deal with middle level training.

II. THE STPA CENTRES OFFERING MIDDLE LEVEL TRAINING

3. There are four STPA centres in the English-speaking African countries which offer middle level statistical training leading to the certificate or diploma qualification. Some of the centres offer in addition professional statistical training leading to the degree in statistics. The names of the centres and their locations,,types of middle level courses offered and the duration of the courses are as follows:

	Name of the centre and location	Type of middle level course offered	Duration of the course
(a)	Eastern Africa Statistical Training Centre (EASTC) (Tanzania)	i) Certificate in Stat. ii) Diploma in Stat.	One academic year One academic year
(b)	University of Ghana, Institute of Statistical Social and Economic Research (ISSER) (Ghana)	i) Certificate in Stat. ii) Diploma in Stat.	One academic year One academic year
(c)	University of Botswana Department of Statistics (Botswana)	i) Certificate in Stat. ii) Diploma in Stat.	One academic year Two academic years
(d)	National University of Lesotho (NUL) Dept. of Statistics	i) Certificate in Stat. ii) Diploma in Stat. (suspended at the moment)	Two academic years One academic year

4. There are three STPA centres in the French-speaking African countries which offer middle level statistical training programmes leading to the Agents techniques (certificate) and the Adjoints techniques (Diploma) qualification. These centres offer in addition the degree qualifications in statistics. The names of the centres and their locations, types of middle level courses offered and duration of the courses are as follows:

	Name of the centre and location	Type of middle level course offered	Duration of the course
(a)	Ecole nationale superieure de statistique et d'economie appliquée (ENSEA), Ivory Coast	i) Agents techniques ii) Adjoints techniques	One academic year Two academic years
(b)	Institut de statistique de planification et d'économie appliquée (ISPEA), Cameroon	i) Agents techniques ii) Adjoint techniques	One academic year Two academic years
(c)	Collége statistique, Ecole nationale d'économie appliquée (ENEA), Senegal	Agents techniques de la statistique	Three academic years

III. THE ECA GUIDE SYLLABUS FOR MIDDLE LEVEL PERSONNEL IN STATISTICS AND ITS OBJECTIVES

5. It may be recalled that the guide syllabus was published in May 1982. It is a revised version of the guide syllabus which was presented to the second meeting of Directors of STPA centres which was held in Addis Ababa, Ethiopia in November 1981.

6. The guide syllabus was developed to satisfy two levels of teaching namely the certificate (Agents techniques) and the Diploma (Adjoints techniques). The guide syllabus is presented in two sections, one section for the centres in the English-speaking African countries and the other section for the centres in the French-speaking African countries including the centre located in France.

7. The objectives of the guide syllabus are as follows:

(a) At the certificate level: to make students familiar with

i) Basic statistical concepts;

ii) Statistical techniques commonly used in data collection and analysis;

iii) General problems of data collection procedures and analysis in relation to some specific subject areas;

iv) Basic economics; and

v) Necessary background knowledge in mathematics

(b) At the Diploma level: to train students to acquire higher technical skills than those acquired at the certificate level. Such staff are expected to play a supervisory role in their respective statistical organisations.

IV. MIDDLE LEVEL SYLLABUSES BEING USED AT STPA CENTRES

8. In order to carry out a comparison of the syllabuses there was need to assemble the syllabuses which the STPA centres were currently using for their middle level statistical training programmes. The information on syllabuses for the centres which the secretariat had at its disposal was as follows:

English-speaking STPA centres	Date of syllabus
EASTC	1979
ISSER	1983
University of Botswana	1979/80
NUL	1978/79

French-speaking STPA centres	Date of syllabus
ENSEA	1982/83
ISPEA	1979/80
ENEA	Not specified

The details supplied in the syllabuses of the centres were supplemented by details on teaching programmes for middle level courses which were supplied by centres to the secretariat for the compilation of the Directory of STPA and Associate centres (Document E/ECA/STPA/DM4/11).

9. Contacts were established with the Directors of the STPA centres, except those of ISSER and ENEA, in January 1985. The Directors were requested to supply their latest middle level syllabuses and to also assist in the comparison of their syllabuses with the ECA guide syllabus. Reminders were sent to the Directors in April 1985. A high non-response rate was observed (since only one centre (EASTC) responded) and as such the secretariat decided to use the information on syllabuses of the centres which was at its disposal, in order to carry out the comparison exercise.

10. In carrying out the comparison an assumption was made that the syllabuses of the centres have not changed greatly over time. A good example is EASTC whose syllabus is dated 1979 and was sent to the secretariat by the centre as its latest syllabus.

V. COMPARATIVE ANALYSIS OF THE SYLLABUSES

(a) Introduction

11. The comparison of the syllabuses was done on the subjects, topics, within subjects and teaching and practical hours devoted to the subjects for each course. Tables 1,2,3,4 and 5 show the results of the comparison

12. The comparison was achieved in the following way : A list of subjects or topics which were available in the syllabuses was made and by marking an "X" against the subject or topic available in the French- or English-speaking STPA centre including the ECA guide syllabus, it has been possible to indicate which subjects or topics are covered by the syllabuses of ECA or the centres. The same thing was done for the number of hours covered per subject of each course. The hours were entered against the subjects covered by the training centres including the ECA guide syllabus. Comments on the results of the comparison will be restricted to the major differences which have been observed in the comparison.

(b) Subject coverage

13. The results of the comparison are shown in tables 1 and 2 for both the certificate and diploma courses . In general the coverage of the subjects differs for the two language groups (English and French). The coverage of subjects in the French-speaking centres syllabuses is more (over 50%) than the coverage in the English-speaking centres syllabuses (the majority less than 50%) at both the certificate and diploma levels. The coverage of subjects in the ECA guide syllabus is 80% at the certificate level and 87% at the diploma level. The subject coverage of syllabuses of some centres may be less due to the fact that elective courses are not specified and that only the total number of credit hours for the elective courses are specified. Examples of centres with this system are the National University of Lesotho (NUL) and the University of Botswana.

14. At the certificate level comparison, the following observations are made:

(i) The ECA guide syllabus does not list the subject of physical education (sports). The subject of communication skills is dealt with partly in the English subject as is the case at the EASTC.

(ii) The following subjects do not appear in the English-speaking centres syllabuses namely Economic geography, commercial law, French, physical education (sports) and sociology.

(iii) All subjects except the subject of practicals are listed in the French-speaking centres syllabuses. It is the understanding of the secretariat that in the French-speaking centres, practicals are regarded as part of the subjects and that practicals are not specifically regarded as a subject on their own as happens in some of the English-speaking centres. Some English-speaking centres may also be following a similar system i.e. the University of Botswana and the National University of Lesotho (NUL) which did not list the subject of practicals specifically.

15. At the diploma level, the following observations are made:

(i) The ECA guide syllabus does not list the subject of physical education (sports).

(ii) The following subjects do not appear in the English-speaking centres syllabuses namely, economic geography, business accounting, French and physical education (sports).

(iii) The subjects of sociology, commercial law and practicals do not appear in the syllabuses of the French-speaking centres. A possible explanation for the subject of practicals not appearing in the syllabuses of the French-speaking centres is given in paragraph 14(iii).

(c) Hours covered per subject

16. It should be noted that the English-speaking centres syllabuses are compared with the English-speaking centres ECA guide syllabus and the French-speaking centres syllabuses are compared with the French-speaking centres ECA guide syllabus. The results of the comparison are shown in table 3 for both the certificate and diploma levels. The syllabuses of three English-speaking centres namely, EASTC, University of Botswana and National University of Lesotho (NUL) had information on number of hours per subject per year. Some of the lecture hours at the University of Botswana and the National University of Lesotho have been estimated using information available in the 1978/79 National University of Lesotho calender. The syllabuses of two French-speaking centres namely ISPEA and ENSEA had information on number of hours per subject per year. Since the ECA guide syllabus of the French-speaking centres did not specify hours of lectures and practicals separately as was done in the English-speaking centres ECA guide syllabus, table 3 follows the presentation in the guide syllabus.

17. The total number of hours devoted to the certificate or diploma course at EASTC are not significantly different from those specified in the ECA guide syllabus. The number of hours devoted to the certificate course at the National University of Lesotho and the University of Botswana are not significantly different from the hours specified in the ECA guide syllabus. At the diploma level the University of Botswana syllabus specifies more hours in total than those specified in the ECA guide syllabus. The National University of Lesotho diploma syllabus specifies less than half the total number of hours specified in the ECA guide syllabus. The total number of hours specified for the certificate or diploma courses in the French-speaking centres syllabuses are less than those specified in the ECA guide syllabus. At the individual subject level the situation for both the English- and French-speaking centres is that while as some subjects may have more lecture/practical hours devoted to them than others when compared to the ECA guide syllabus, others have less lectures/practicals hours devoted to them.

(d) Coverage of topics within subjects

18. The results of the comparison are shown in tables 4 and 5. Table 4 shows the details of the topics which are covered in the syllabuses of ECA and the centres while table 5 shows the coverage of topics within subject at each STPA centre and ECA guide syllabus presented in percentage form. It should be noted that in the presentation some topics may have been grouped due to their being of the same type. It should also be noted that the number of topics per subject varies from subject to subject and from STPA centre to centre.

19. It should be mentioned that in some of the centres, for example the University of Botswana and the National University of Lesotho, students are supposed to take elective courses for their studies. The elective courses at the two centres are not specified in their syllabuses, hence it is difficult to know which elective courses are covered in the teaching programmes. It is therefore possible that for some subjects the topics covered may be indicated to be less than what the actual situation at the centre may be.

20. It should be noted further that the Institute of Statistical Social and Economic Research (ISSER) of the University of Ghana has not been included in the comparison of topics due to the fact that the information on topics covered for each subject was not available to the secretariat. Also, due to the similar systems being followed at the Universities of Botswana and National University of Lesotho, it has been assumed that the coverage of topics per subject is the same at the two centres.

21. In examining table 5, it is clear that the coverage of topics per subject in the ECA guide syllabus is 75% and above at both the certificate and diploma levels. With respect to the STPA centres, it is clear that the coverage of topics varies from subject to subject and from centre to centre. In some subjects the topic coverage is as low as 25%. Possible reasons for the coverage differences may be the following :

(a) lack of specifications of subjects and topics for the elective courses;

(b) areas of emphasis in the course programmes i.e. more applied topics as cpposed to theoretical topics;

(c) length of the course programme i.e. one academic year or two academic years.

VI. CONCLUSION

22. The ECA guide syllabus was prepared with the purpose of assisting STPA centres in the preparation or modification of their guide syllabuses for various courses. The STPA centres are expected to modify the contents of the guide syllabus to suit their conditions. The comparison exercise of the syllabuses is expected to assist the secretariat in revising the guide syllabus in future.

23. The meeting of Directors of STPA centres is invited:

(a) To advise on the methodology to be adopted in studying the impact of ECA guide syllabus for training at STPA centres;

(b) To comment on the method adopted by the secretariat in comparing the contents of the syllabuses and also to comment on the results which have been observed through the comparison;

(c) To suggest ways of improving the guide syllabus in the next revision in order to make it meet the needs of the STPA centres.

Subject coverage comparison at the certificate and diploma levels

Subject	ECA Guide. syllabus	English-speaking centres: EASTC	ISSER	Univ. of Botswana	National Univ. of Lesotho (NUL)*	French-speaking centres: ENSEA	ISPEA	ENEA
(a) Certificate level								
- Mathematics	X	X	X	X	X	X	X	X
- Statistical Theory and methods	X	X	X	X	X	X	X	X
- Applied Statistics	X	X	X	X	X	X	X	X
- Economics	X	X	X	X		X	X	X
- Economic geography	X					X	X	X
- Business accounting	X	X						X
- Communication skills	X	X		X	X	X	X	X
- Computer science	X	X			X	X	X	X
- Practicals	X	X	X					
- Field project	X	X	X	X	X		X	
- Sociology								X
- English	X	X		X	X		X	X
- French	X					X	X	X
- Commercial law								X
- Physical education (sports)						X	X	X
(b) Diploma level								
- Mathematics	X	X		X		X	X	Course was cancelled
- Statistical theory and methods	X	X	X	X	X	X	X	
- Applied statistics	X	X	X	X	X	X	X	
- Economics	X	X				X	X	
- Economic geography	X					X	X	
- Business accounting	X					X	X	

* Diploma course was discontinued but information was available from the syllabus.

Subject	ECA Guide syllabus	English-speaking centres				French-speaking centres		
		EASTC	ISSER	Univ. of Botswana	National Univ. of Lesotho (NUL)*	ENSEA	ISPEA	ENEA
(b) Diploma level (cont'd)								Course was cancelled
- Commercial law	X	X						
- Computer science	X	X	X	X		X	X	
- Practicals	X	X						
- Field project	X	X		X	X	X	X	
- Sociology	X	X						
- English	X	X					X	
- French	X					X	X	
- Physical education (sports)						X	X	

* Diploma course was discontinued but information was available from the syllabus.

Percentage coverage of subjects at certificate and diploma levels at each training centre

Level of training	All subjects*	ECA guide syllabus	English-speaking centres				French-speaking centres		
			EASTC	ISSER	Univ. of Botswana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
Certificate	100	80	67	40	47	47	60	73	80
Diploma	100	93	71	21	36	21	71	79	-

* Number of subjects at certificate level = 15
Number of subjects at Diploma level = 14

Comparison of number of hours covered per subject per training course

Subject	English-speaking centres[1]								French-speaking centres			
	ECA guide syllabus			EASTC			Univ. of Botswana	National Univ. of Lesotho	ECA guide syllabus	ENSEA[2]	ISPEA[3]	ENEA
	L	P	Total	L	P	Total	L	L				
(a) Certificate level												
- Mathematics	96	64	160	180	-	180	195	195	64	30	130	
- Statistical theory and methods	154	64	218	120	-	120	195	195	316	275	130	
- Applied statistics	190	64	254	120	90[4]	210	60	60			155	
- Economics	64	-	64	150	-	150	60		40	30	30	
- Economic geography									20	30	35	
- Business accounting									30			
- Communication skills							180	180				
- Computer science							30	30	20			
- Practicals												
- Field project	-	120	120	-	190	190			140	1 month		
- Sociology												
- English									32		30	
- French	64	-	64						20	60	30	
- Commercial law												
- Physical education (sports)							135[5]	135[5]		35		
TOTAL	568	312	880	570	280	850	855	795	682	460	540	

Details not available

1/ L = Lecture, P = Practicals (Laboratory), The University of Botswana and Univ. of Lesotho lecture hours have been estimated by assuming 15 teaching weeks for each semester, no details on hours of lectures/practicals were available for ISSER hence the centre is not listed.

2/ Information obtained from the 1982-83 syllabus.

3/ Hours for the diploma subjects are estimated from the information supplied in the 1983 Directory of STPA centres. Hours of assessment not included in the estimation exercise.

4/ Hours specified cover the topics of statistical computing & elements of accounting.

5/ Hours for 18 units of elective courses for ½ semester.

Subject	English-speaking centres: ECA guide syllabus L	ECA guide syllabus P	ECA guide syllabus Total	EASTC L	EASTC P	EASTC Total	Univ. of Botswana L	National Univ. of Lesotho L	French-speaking centres: ECA guide syllabus	ENSEA	ISPEA	ENEA
(b) Diploma level												
- Mathematics	96	64	160	210	-	210	60		104	100	253	
- Statistical theory and methods	154	64	218	180	-	180	315	135	218	290	288	
- Applied statistics	124	64	188	120	90 [6/]	210	105	120	210	265	299	
- Economics	64	-	64	150	-	150			104	155		
- Economic geography									20	30		
- Business accounting									30	40	161	
- Commercial law	64	-	64						20			
- Computer science							75		50	70		
- Practicals												
- Field project	-	120	120	-	190	190	90	60	420	2 mon.	3 mon.	
- Sociology	64	-	64						20			
- English									64			
- French	64	-	64						20	60		
- Physical education (sports)										70		
- Other							405 [7/]	68 [8/]			149	
TOTAL	630	312	942	660	280	940	1050	383	1280	1080	1150	

Course was cancelled

6/ Practical hours may refer to statistical theory and methods and applied statistics subjects.

7/ Hours for 27 units of other relevant courses.

8/ Hours for 9 units of elective courses for ½ semester.

Within subject level (topics comparison at the certificate and diploma levels

Subject	Topics	English-speaking centres				French-speaking centres		
		ECA guide syllabus	EASTC	Univ. of Botswana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
(a) Certificate level								
i) Mathematics	- Sets	X	X	X	X	X	X	X
	- Numbers	X	X	X	X			
	- Graphical presentation and solutions	X	X	X	X	X	X	X
	- Matrix & linear algebra (determinants)	X	X	X	X		X	
	- Combinatory analysis	X	X	X	X			
	- Sequences & series	X	X	X	X	X	X	X
	- Linear programming/ inequalities	X	X	X	X			X
	- Binomial theorem of an index	X	X	X	X			
	- Complex numbers	X		X	X			
	- Trigonometry	X	X				X	
	- Cartesian geometry	X						
	- Differential & integral calculus	X	X	X	X	X		X
	- Binary relations	X				X	X	X
	- Groups, rings & fields	X				X	X	X
	- Polynomials	X					X	X
	- Variables, functions, continuity & limit	X	X	X	X	X	X	X
	- Numerical computation	X					X	X
	- Co-ordinate geometry		X					
	- Growth models			X	X			
	- Differential equations			X	X			
	- Difference equations			X	X			X

			English-speaking centres			French-speaking centres		
	Subject	Topics	ECA guide syl-labus	EASTC	Univ. of Bots-wana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
(ii)	Statistical theory and methods	- Descriptive statistics	X	X	X	X	X	X	X
		- Measures of central tendency	X	X	X	X	X	X	X
		- Measures of dispersion including moments, skewness & kurtosis	X	X	X	X			X
		- Probability, decision theory	X	X	X	X			
		- Stat. inference	X	X	X	X			
		- Linear association	X	X	X	X			
		- Index numbers and rates	X	X	X	X	X	X	X
		- Time series	X	X			X	X	X
		- Sampling/ planning surveys and experiments	X	X	X	X			X
		- Quality control		X					
		- Contingency tables and tests of goodness of fit			X	X			
(iii)	Applied Statistics	- General officials stat.	X	X	X	X	X	X	X
		- Health statistics		X					X
		- Agriculture tat	X	X			X	X	X
		- Education statistics							X
		- Financial statistics	X					X	
		- Demography	X	X	X	X	X	X	X
		- Industrial statistics	X	X			X	X	X
		- National accounts	X	X			X	X	X
		- Price statistics	X	X			X	X	X
		- Labour & employment Stat.	X	X			X		X
		- Transport statistics	X	X			X	X	X
		- International trade stat.	X	X			X	X	X
		- Statistical organization and operation	X	X	X	X		X	
		- Elements of accounting and the budget	X	X	X	X		X	X
		- Dissememination of information			X	X	X		

Subject	Topics	English-speaking centres				French-speaking centres		
		ECA guide syl-labus	EASTC	Univ. of Bots-wana	Nation-al Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
(iv) Economics	- Micro-economics	X	X			X	X	X
	- Macro-economics	X	X			X	X	X
	- Applied economics	X	X	X	X	X	X	X
(v) Economic geography	- Notions of physical geography	X				X		X
	- African economic geography	X				X		X
	- Major economic groups & their economy pro-duction & marketing	X				X	X	X
	- Major products	X					X	
(vi) Business accounting	- Fundamentals of accounting	X	X					
	- Record of transactions	X	X					
	- Books of original entry (i.e. cash-book etc.)	X	X					
	- Trial balance & its interpretation	X	X					
	- Types of accounts (suspense, nominal & personal, profit & loss & preparation of final accounts	X	X					
	- Partnership and company accounts (i.e joint stock company etc.)	X	X					
	- Depreciation		X					

			English-speaking centres				French-speaking centres		
	Subject	Topics	ECA guide syl-labus	EASTC	Univ. of Bots-wana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
(vii)	Communi-cation skills	- Planning individual study time scheduled for the semester			X	X			
		- Surveying textbooks and assignments			X	X			
		- Note making from texts and lectures			X	X			
		- Improving scientific vocabulary			X	X			
		- Analysing common patterns of scientific writings			X	X			
		- Reading analysis & comprehension			X	X			
		- Classifying information			X	X			
		- Techniques of writing a research paper including library research			X	X			
		- Reading for appreciation and discussion			X	X			
(viii)	Computer science	- Use of machines in office work	X	X	X	X	X	X	X
		- Principles of a computer	X	X	X	X	X	X	X
		- Instructions & programming	X	X	X	X			X
		- Fortran, basic and use of packages	X	X	X	X			X
		- Storage and retrieval		X	X	X			X
(ix)	Practicals	- Mathematics	X						
		- Statistical theory and methods	X	X					
		- Applied statistics	X	X					
(x)	Field project		X	X	X	X	X	X	X
(xi)	Sociology	- Topics not available							

Subject	Topics	ECA guide syl-labus	English-speaking centres: EASTC	Univ. of Bots-wana	National Univ. of Lesotho (NUL)	French-speaking centres: ENSEA	ISPEA	ENEA
(xii) English	- Study of texts to teach idiomatic terms and expressions	X					X	
	- Translation of economic & statistics texts	X						X
	- Oral expressions in English (practice)						X	
	- Reporting techniques	X	X	X	X	X		X
(xiii) French	- Study of economic, social topical text to increase vocabulary	X				X	X	
	- Correspondence, vocabulary, style	X				X	X	X
	- Written and oral apreciation of and commentary on texts reports and summaries	X				X	X	X
	- Introduction to administrative drafting	X				X	X	X
(xiv) Commerical law	- Introduction to public law							X
	- Introduction to constitutional law							X
	- Administration of law							X
(xv) Physical education	- Topics not available							

Subject	Topics	English-speaking centres				French-speaking centres		
		ECA guide syllabus	EASTC	Univ. of Botswana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
(b) Diploma level								
(i) Mathematics	- Infinite series, sequences	X	X				X	
	- Polynomials	X	X					
	- Graphical representation of functions & simple curve tracing	X	X					
	- Functions of several real variables	X	X			X	X	
	- Differential equations	X	X					
	- Integration and differentiation	X	X	X		X	X	
	- Matrices, vectors, linear algebra determinants	X	X	X			X	
	- Analytic geometry and co-ordinate geometry	X	X					
	- Principles of mathematical induction exponential		X					
	- Logarithm, trigonometric and hyperbolic functions	X				X	X	
	- Set theory	X				X	X	
	- Algebraic structures	X				X	X	
	- Principals of numeration systems	X				X	X	
	- Inequalities	X	X			X	X	
	- Equations, system of equations of first order & second order	X				X	X	
	- Numerical functions	X				X	X	
	- Limits & continuity	X				X	X	
	- Numerical computation, linear interpolation	X	X				X	
	- Application in economics			X				
	- Complex numbers		X					

			English-speaking centres				French-speaking cer		
	Subject	Topics	ECA guide syl-labus	EASTC	Univ. of Bots-wana	National Univ. of Lesotho 1/ (NUL)	ENSEA	ISPEA	ENE
(ii)	Statistical theory and methods	- Probability (continuous random variables and standard distribution)	X	X	X	X	X	X	
		- Statistical inference (estimation & hypothesis testing)	X	X	X	X	X	X	
		- Sampling & sampling distributions	X	X	X	X	X	X	
		- Analysis of variance	X	X	X	X			
		- Contingency tables	X	X	X	X			
		- Time series analysis	X	X	X	X	X	X	
		- Linear programming	X	X					
		- Indicies	X			X	X	X	
		- Descriptive statistics	X	X	X	X	X	X	
		- Statistical organisation	X				X	X	
		- Collection of information	X	X			X	X	
		- Non-parametric methods		X	X	X			
		- Regression & correlation	X		X	X	X	X	
(iii)	Applied statistics	- Introductory econometrics			X	X			
		- Organisation of statistical survey	X	X	X	X			
		- Demography	X	X	X	X	X	X	
		- Education statistics	X	X					
		- Housing statistics	X	X					
		- Balance of payments statistics	X	X					

1/ For National University of Lesotho and also University of Botswana, topics such as regress and correlation, time series, index numbers, estimation and tests of hypothesis, analysis of variance and non-parametric methods which are listed in the applied statistics course are already covered in statistical theory and methods course.

Subject	Topics	ECA guide syllabus	EASTC	Univ. of Botswana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	EN
		English-speaking centres				French-speaking ce		
(iii) Applied Stat.(cont'd)	- Financial statistics	X	X				X	
	- National income accounting	X	X				X	
	- Statistics of planning	X	X					
	- Medical (Health) stat.	X	X					
	- Research methods	X						
	- Organisation & supervision of statistical work	X	X					
	- Labour & manpower stat.	X	X	X	X	X	X	
	- Price statistics	X	X				X	
	- External trade	X	X			X	X	
	- Industrial statistics	X	X			X	X	
	- Transport statistics	X	X			X	X	
	- Agricultural statistics	X	X			X	X	
	- National statistical legislation		X					
	- New developments in applied statistics		X					
(iv) Economics	- Micro-economics	X	X			X	X	
	- Macro-economics	X	X			X	X	
	- Applied economics	X	X			X	X	

Subject	Topics	English-speaking centres: ECA guide syllabus	EASTC	Univ. of Botswana	National Univ. of Lesotho (NUL)	French-speaking cent: ENSEA	ISPEA	ENE
(v) Economic geography	- Major world commodities production & export	X				X	X	
	- Agricultural and industrial production	X				X	X	
	- Ores and raw materials	X				X	X	
	- Energy products	X				X	X	
	- World international traffic	X				X	X	
	- Economic groupings outside & inside Africa	X				X	X	
(vi) Business accounting	- Business as an economic agent	X				X	X	
	- Accounts	X				X	X	
	- Accounting plan	X				X	X	
	- Accounting operations at end of financial year	X				X	X	
	- Operating account	X				X	X	
	- Management analysis	X				X	X	
	- Linkage between business accounting & national accounts	X				X		
	- Balance sheet	X						
(vii) Commercial law	- General introduction	X						
	- Legal subjects i.e disabilities, classification of property, contract, ones rights	X						
	- Trade	X						
	- Obligations & rights of commercial enterprises	X						

Subject	Topics	English-speaking centres: ECA guide syllabus	EASTC	Univ. of Botswana	National Univ. of Lesotho (NUL)	French-speaking centr: ENSEA	ISPEA	ENEA
(viii) Computer science	- Data problems	X		X	X			
	- Errors and verifications	X		X	X			
	- Data carriers	X						
	- Review of numeration systems, binary numbers	X						
	- Hardware	X				X		
	- Software (machine languages, fortran, basic, algol cobol)	X		X	X	X	X	
	- Controls in data processing	X		X	X			
	- Organisation of a data processing centre	X						
	- Logic and optional designs of programmation	X				X	X	
	- Concrete application	X					X	
	- Elements of data processing (editing, coding, punching etc.)			X	X			
	- Computers, flow charts and programming languages			X	X			
(ix) Practicals	- Mathematics	X	X					
	- Statistical theory and methods	X	X					
	- Applied statistics	X	X					
	- Economics		X					
(x) Field project		X	X	X	X		X	

Subject	Topics	English-speaking centres				French-speaking centres		
		ECA guide syl-labus	EASTC	Univ. of Bots-wana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
(xi) Sociology	- Introduction to sociology	X						
	- Principles & methods of sociology	X						
	- Culture and social organisation	X						
	- Social structure and social change	X						
	- Norms, values and socialization	X						
	- Social differentiation and stratification, social mobility	X						
	- Social institutions	X						
	- Sociology and economics selected interrelated issues	X						
	- Social research methods	X						
(xii) English	- Study of texts to learn idiomatic terms and expressions	X					X	
	- Translation of economic social or topical texts	X					X	
	- Vocabulary building and grammar learning	X					X	
	- Reporting techniques		X					
(xiii) French	- Comprehension of topical economic, social texts	X				X	X	
	- Note taking, writing of summaries & comments	X				X	X	
	- Text analysis, tilting	X				X	X	
	- Vocabulary building	X				X	X	

Subject	Topics	English-speaking centres				French-speaking centres	
		ECA guide syl-labus	EASTC	Univ. of Bots-wana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
(xiii) French (cont'd)	- Expressions	X				X	X	
	- Administrative drafting, style, reports instructions	X				X	X	
	- Increased readability	X				X	X	
	- Practice in oral presentation of selected topics	X				X	X	
(xiv) Physical education (sports)						X	X	

Percentage coverage of topics within subjects at STPA centres

Subject	Number and percentage of topics listed		Coverage of topics (%)						
	Number	%	ECA guide syllabus	EASTC	Univ. of Botswana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
Certificate level									
- Mathematics	21	100	81	57	67	67	33	48	52
- Statistical theory and methods	11	100	82	91	92	82	36	36	55
- Applied statistics	15	100	80	80	33	33	67	73	73
- Economics	3	100	100	100	33	33	100	100	100
- Economic geography	4	100	100	-	-	-	75	50	75
- Business accounting	7	100	86	100	-	-	-	-	-
- Communication skills	10	100	-	-	100	100	-	-	-
- Computer science	5	100	80	100	100	100	40	40	100
- Practicals	3	100	100	67	-	-	-	-	-
- Field project	1	100	100	100	100	100	100	100	100
- Sociology*	-	-	-	-	-	-	-	-	-
- English	4	100	75	25	25	25	25	50	50
- French	4	100	100	-	-	-	100	100	75
- Commercial law	3	100	-	-	-	-	-	-	100
- Physical education (sports)*	-	-	-	-	-	-	-	-	-

* Details on topics for these subjects were not available

Subject	Number and percentage of topics listed		Coverage of topics (%)						
	Number	%	ECA guide syllabus	EASTC	Univ. of Botswana	National Univ. of Lesotho (NUL)	ENSEA	ISPEA	ENEA
Diploma level									
- Mathematics	20	100	85	60	15	-	45	65	-
- Statistical theory and methods	13	100	92	77	69	77	69	69	-
- Applied statistics	20	100	85	90	20	20	30	45	-
- Economics	3	100	100	100	-	-	100	100	-
- Economic geography	6	100	100	-	-	-	100	100	-
- Business accounting	8	100	88	-	-	-	88	75	-
- Commercial law	4	100	100	**	-	-	-	-	-
- Computer science	12	100	83	-	50	50	25	25	-
- Practicals	4	100	75	100	-	-	-	-	-
- Field project	1	100	100	100	100	100	-	100	-
- Sociology	9	100	-	-	-	-	-	-	-
- English	4	100	75	-	-	-	-	75	-
- French	8	100	100	-	-	-	100	100	-
- Physical education (sports)	1	100	-	-	-	-	100	100	-

** Subject is taught but no examinations are conducted; details of topics not available.